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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/709,930	09/09/96	GREEN	P 000287-00482

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TOWNSEND AND TOWNSEND AND CREW
TWO EMBARCADERO CENTER EIGHTH FLOOR
SAN FRANCISCO CA 94111

EXAMINER

LEE, R

ART UNIT PAPER NUMBER

2713

DATE MAILED: 06/01/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/709,930

Applicant(s)
Green

Examiner
Richard Lee

Group Art Unit
2713



☒ Responsive to communication(s) filed on Mar 20, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 46-103 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 46-103 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4, 6, 7

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
3. Claims 46-76, 78, 79, 81, 82, 84-86, 90-95, 97-99, 101, and 103 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 46, line 5, line 7, claim 78, line 3, line 5, the phrase "such as" as claimed is indefinite, respectively, and should be avoided;

(2) claim 64, lines 1-2, claim 65, lines 1-2, "the end effector assembly" shows no clear antecedent basis, respectively;

(3) claim 85, line 3, "systems" should be changed to "system" in order to provide proper antecedent basis for the same as specified at claim 83, line 4;

(4) claim 85, line 4, "control" should be deleted in order to provide proper antecedent basis for the same as specified at claim 83, lines 2-4;

(5) claim 86, line 3, "systems" should be changed to "system" in order to provide proper antecedent basis for the same as specified at claim 84, line 4; and

(6) claim 86, line 4, "control" should be deleted in order to provide proper antecedent basis for the same as specified at claim 84, lines 2-4.

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

5. Claims 46-57, 69, 71, 72, 77-84, 87-92, 96, and 97 are rejected under 35 U.S.C. 102(e) as being anticipated by Wilk (5,217,003).

Wilk discloses an automated surgical system and apparatus as shown in the figure, and the same minimally invasive surgical method and method for performing surgery on an anatomy of a person as claimed in claims 46-57, 69, 71, 72, 77-84, 87-92, 96, and 97, comprising the same providing a control assembly coupled to a surgical assembly including a surgical instrument having a forearm member, a wrist member (see 21 of figure) pivotally connected to the forearm member such as to be capable of being pivoted about a first axis, and an end effector member movably coupled to the wrist member such as to be capable of being moved about a second axis that is generally perpendicular to the first axis (see figure and column 2); inserting the surgical instrument of the surgical assembly into an anatomy of a person until the end effector member reaches an internal surgical site within the anatomy of the person (see figure); pivoting manually a wrist-pivoting element of the control assembly to cause the wrist member to pivot correspondingly about the distal forearm end and along the first axis (see column 2); moving manually an end effector-controlling member to move about the second axis and perform a

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surgical procedure at the internal surgical site within the anatomy of the person (see column 2); axially, rotatably, and pivoting moving manually a forearm control element of the control assembly to cause the forearm member to axially, rotatably, and pivotably move, respectively, correspondingly along a longitudinal forearm axis of the forearm member (see 24 of the figure); inserting, prior to the moving step, an endoscope into the anatomy of the person such that the endoscope is oriented toward the end effector member, and displaying an image of the end effector member for viewing by an eye of an operator (see column 2); wherein the control assembly comprises a computer and a control coordinate system, and the internal surgical site includes a surgical coordinate system (see 44 of figure); wherein a field of view of the endoscope is at a first angle relative to vertical, and wherein a field of view of the eye of the operator is at a second angle relative to vertical which is different than the first angle (see figure and column 3); maintaining gas insufflation pressure within the internal surgical site (see column 1, line 67 to column 2, line 2); the end effector member comprises a structure selected from the group consisting of retractors, electrosurgical cutters, electrosurgical coagulators, forceps, needle holders, scissors, blades, and irrigators (see 21 of figure); displaying an image of the surgical end effector at the internal surgical site for viewing by an eye of an operator at a control station, and moving manually by the operator a surgical control handle of the control station to cause the surgical end effector to move and perform a surgical procedure at the internal surgical site within the anatomy of the person (see columns 1-3); and pivoting manually by the operator a wrist-

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pivoting handle of the control station to cause the wrist member to pivot on the forearm (see columns 2-3).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 58-68, 70, 85, 86, 93-95, 98, and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilk as applied to claims 46-57, 69, 71, 72, 77-84, 87-92, 96, and 97 in the above paragraph (5), and further in view of "Another Pair of Hands for Surgeon?" from Perspective magazine of record (hereinafter referred to as "Perspective").

Wilk shows substantially the same minimally invasive surgical method and method for performing surgery on an anatomy of a person as above, further including the computer scaling movements of the end effector-controlling element by a scaling factor (see 44 of figure), but Wilk does not particularly disclose the followings:

(a) remapping with the computer movements of the end effector-controlling element/surgical control handle in the surgical coordinate system to movements of the surgical end effector member in the control coordinate system such that the image of the end effector member displayed to the eye of the operator and the end effector-controlling element being manually moved by the operator appear to the operator to define an integral surgical instrument as claimed in claims 58-61, 85, and 86;

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(b) wherein the image of the end effector member appears to the eye of the operator to extend distally from the end effector-controlling element to a virtual end effector position within the control coordinate system and an angle defined between a position of the end effector member and a field of view of the endoscope within the surgical coordinate system remains substantially equal to an angle defined between the eye of the operator and the virtual end effector position within the control coordinate system as claimed in claims 62 and 63;

(c) wherein the end effector assembly defines an angular orientation in the surgical coordinate system, and the end-effector-controlling element defines an angular orientation in the control coordinate system, and wherein the control assembly maintains the angular orientation of the end effector member relative to the endoscope at a same angular orientation as the angular orientation of the end effector-controlling element relative to the eye of the operator when the operator manually moves the end effector-controlling element as claimed in claims 64 and 65; and

(d) magnifying an image of the internal surgical site as claimed in claims 66-68.

Regarding (a) to (d), Perspective shows a telesurgery system as shown in Figures 1 and 3, and teaches the conventional remapping with the computer movements of the end effector-controlling element/surgical control handle in the surgical coordinate system to movements of the surgical end effector member in the control coordinate system such that the image of the end effector member displayed to the eye of the operator and the end effector-controlling element being manually moved by the operator appear to the operator to define an integral surgical instrument; wherein the image of the end effector member appears to the eye of the operator to

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extend distally from the end effector-controlling element to a virtual end effector position within the control coordinate system and an angle defined between a position of the end effector member and a field of view of the endoscope within the surgical coordinate system remains substantially equal to an angle defined between the eye of the operator and the virtual end effector position within the control coordinate system; wherein the end effector assembly defines an angular orientation in the surgical coordinate system, and the end-effector-controlling element defines an angular orientation in the control coordinate system, and wherein the control assembly maintains the angular orientation of the end effector member relative to the endoscope at a same angular orientation as the angular orientation of the end effector-controlling element relative to the eye of the operator when the operator manually moves the end effector-controlling element; and magnifying an image of the internal surgical site (see Figures 1 and 3 and page 27). Therefore, it would have been obvious to one of ordinary skill in the art, having the Wilk and Perspective references in front of him/her and the general knowledge of telesurgical procedures, would have had no difficulty in providing the magnification of images of the internal surgical site and remapping of angular movements of the end effector controlling element to angular movements of the end effector member to define an integral surgical instrument to the operator as taught by Perspective for the surgical system of Wilk for the same well known purposes as claimed.

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8. Claims 73, 75, 100, and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilk as applied to claims 46-57, 69, 71, 72, 77-84, 87-92, 96, and 97 in the above paragraph (5), and further in view of "Telesurgery may bridge future gaps" by Richter of record (hereinafter referred to as Richter).

Wilk shows substantially the same minimally invasive surgical method and method for performing surgery on an anatomy of a person as above, but does not particularly disclose the surgical assembly including a tactile feedback member supported by the end effector member and reproducing tactile sensations on hands of an operator at the control assembly as claimed in claims 73, 75, 100, and 102. However, Richter discloses a telesurgical system as shown in the figure, and teaches the conventional tactile input/feedbacks involving texture, temperature, and pressure of the object he touches. Therefore, it would have been obvious to one of ordinary skill in the art, having the Wilk and Richter references in front of him/her and the general knowledge of telesurgical systems, would have had no difficulty in providing a tactile feedback and the reproduction of tactile sensations on the hands of an operator as taught by Richter for the surgical system and method of Wilk for the same well known purposes as claimed.

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9. Claims 74, 76, 101, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wilk and Perspective as applied to claims 46-72, and 77-99 in the above paragraphs (5) and (7), and further in view of "Telesurgery may bridge future gaps" by Richter of record (hereinafter referred to as Richter).

The combination of Wilk and Perspective show substantially the same minimally invasive surgical method and method for performing surgery on an anatomy of a person as above, but does not particularly disclose the surgical assembly including a tactile feedback member supported by the end effector member and reproducing tactile sensations on hands of an operator at the control assembly as claimed in claims 74, 76, 101, and 103. However, Richter discloses a telesurgical system as shown in the figure, and teaches the conventional tactile input/feedbacks involving texture, temperature, and pressure of the object he touches. Therefore, it would have been obvious to one of ordinary skill in the art, having the Wilk, Perspective, and Richter references in front of him/her and the general knowledge of telesurgical systems, would have had no difficulty in providing a tactile feedback and the reproduction of tactile sensations on the hands of an operator as taught by Richter for the surgical system and method of Wilk for the same well known purposes as claimed.

10. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

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or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

(703) 308-5399 (for informal or draft communications, please label
"PROPOSED" or "DRAFT")


Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington. VA., Sixth Floor (Receptionist).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Richard Lee/rl

5/22/98



**RICHARD LEE
PRIMARY EXAMINER**